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EXAMINER	
BOYER, RANDY	

ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/623,373	HEED, BJORN	
	Examiner	Art Unit	
	Randy Boyer	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 August 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6,7 and 9-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6,7 and 9-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *20 February 2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Examiner acknowledges response filed 2 August 2007 containing amendments to the claims and remarks.

2. Claims 1-4, 6, 7, and 9-17 are pending.

3. Examiner acknowledges that Applicant's amendment is sufficient to overcome the previous objection made with respect to claim 17.

4. The previous rejections of claims 1-4, 6, 7, and 9-17 under 35 U.S.C. 102(b) are maintained. The rejections follow.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office Action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-4, 6, 7, and 9-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Gribbon (US 5,589,142).

7. With respect to claim 1, Gribbon discloses equipment for purification of gases comprising supply means (58) to mix reducing agents with the gases to form a mixture and to supply the mixture to at least one heat exchanging matrix (10), the matrix adapted to heat the gases in a regenerative process to oxidation or self-decomposition temperature and a catalytic process, the at least one heat exchanging matrix includes three zones, one zone is a catalytic zone having a temperature below the oxidation or self-decomposition temperature that is catalytically active in promoting reduction of nitrogen (22, 24, and column 5, lines 41-46), one zone is a combustion zone having a temperature of at least the oxidation or self-decomposition temperature (26), and one zone is an intermediate matrix zone (see Gribbon, Figure 2), the catalytic zone is separated from the combustion zone by the intermediate matrix zone counted in the direction of flow, wherein the intermediate matrix zone has a temperature reducing effect on the gases prior to entering the catalytic zone.

Examiner notes that Gribbon does not explicitly disclose an intermediate matrix zone.

However, Gribbon's Figure 2 provides a catalytic zone (aligned horizontally and corresponding to elements 22 and 24 in Figure 1), and a combustion zone (corresponding to element 28 in Figure 1). The catalytic zone and combustion zone as shown by Gribbon in Figure 2 are necessarily separated by some distance (an intermediate zone). Because Gribbon does not provide a means for maintaining a constant temperature between the combustion zone and catalytic zone (i.e. in the

intermediate zone), the intermediate zone will necessarily have a temperature-reducing effect on the gases prior to entering the catalytic zone.

Thus, Gribbon provides inherent disclosure for an intermediate matrix zone separating the catalytic zone and combustion zone, wherein the intermediate matrix zone has a temperature reducing effect on the gases prior to entering the catalytic zone.

8. With respect to claim 2, Gribbon discloses equipment for the purification of gases comprising supply means (58) to mix reducing agents with the gases to form a mixture and to supply the mixture to a single heat exchanging matrix (10), the matrix adapted to heat the gas in a regenerative process to oxidation or self-decomposition temperature and a catalytic process, the heat exchanging matrix includes two catalytic zones (22, 24) that are catalytically active and situated on each side of a center combustion zone of the matrix and two intermediate zones (see Gribbon, Figure 2; each intermediate zone being at either side of the combustion chamber burner and providing a separation distance between the combustion chamber burner and catalytic zones), each catalytic zone is separated from the center combustion zone by one of the intermediate matrix zones counted in the direction of flow, wherein the intermediate matrix zone has a temperature reducing effect on the mixture prior to entering the catalytic zone and each zone has a temperature below the oxidation or self-decomposition temperature.

9. With respect to claim 3, Gribbon discloses wherein the supply means (58) includes a duct (see Gribbon, Fig. 1), the duct adapted to supply agents that reduce nitrogen oxides to the matrix.

10. With respect to claim 4, Gribbon discloses equipment for the purification of gases comprising at least one heat exchanging matrix (10), and further comprising a supply interrupt mechanism arranged and constructed to interrupt a supply of reducing agent for a short period in connection with a change of direction of gas flow through the equipment (see Gribbon, column 4, lines 4-23).

11. With respect to claim 6, Gribbon discloses wherein the supply means (58) includes a duct (see Gribbon, Fig. 1), the duct adapted to supply reducing agents that reduce nitrogen oxides to the matrix.

12. With respect to claim 7, Gribbon discloses equipment for the purification of gases comprising a single heat exchanging matrix (10), a duct (54), the duct adapted to supply agents that reduce nitrogen oxides to the matrix, and further comprising a supply interrupt mechanism arranged and constructed to interrupt a supply of reducing agent for a short period in connection with a change of direction of gas flow through the equipment (see Gribbon, column 4, lines 4-23).

13. With respect to claim 9, Gribbon discloses equipment for the purification of gases comprising at least one heat exchanging matrix (10), a duct (54), the duct adapted to supply agents that reduce nitrogen oxides to the matrix, and wherein the zones are arranged such that a gas flowing through the equipment encounters the catalytic zone before the combustion zone (see Gribbon, column 3, lines 48-67, and column 4, lines 1-30).

14. With respect to claim 10, Gribbon discloses equipment for the purification of gases comprising a single heat exchanging matrix (10), and further comprising a duct

(54), the duct adapted to supply agents that reduce nitrogen oxides to the matrix, wherein the zones are arranged such that the gas flowing through the equipment encounters the catalytic zone before the combustion zone (see Gribbon, column 3, lines 48-67, and column 4, lines 1-30).

15. With respect to claim 11, Gribbon discloses equipment for purification of gases comprising at least one heat exchanging matrix (10), wherein the matrix is arranged such that the gas can flow in a first direction in which the gas encounters the catalytic zone before combustion zone and such that the gas can flow in a second direction in which the gas encounters the combustion zone before it encounters the catalytic zone (see Gribbon, column 4, lines 54-63).

16. With respect to claim 12, Gribbon discloses equipment for purification of gases comprising at least one heat exchanging matrix (10), wherein the matrix is arranged such that the gas can flow in a first direction in which the gas encounters the catalytic zone before combustion zone and such that the gas can flow in a second direction in which the gas encounters the combustion zone before it encounters the catalytic zone (see Gribbon, column 4, lines 54-63), and wherein the equipment is adapted such that the gas flows only one direction at a time (see Gribbon, column 3, line 48 through column 5, line 20).

17. With respect to claim 13, Gribbon discloses wherein the supply means (58) include a duct (see Gribbon, Fig. 1), the duct adapted to supply reducing agents that reduce nitrogen oxides to the matrix.

18. With respect to claim 14, Gribbon discloses equipment for the purification of gases comprising a single heat exchanging matrix (10), a duct (54), the duct adapted to supply agents that reduce nitrogen oxides to the matrix, and further comprising a supply interrupt mechanism arranged and constructed to interrupt a supply of reducing agent for a short period in connection with a change in direction of gas flow through the equipment (see Gribbon, column 4, lines 4-23).

19. With respect to claim 15, Gribbon discloses wherein the supply means (58) include a duct (see Gribbon, Fig. 1) for providing a supply of a reducing agent wherein the matrix is arranged such that the gas flows only one direction at a time (see Gribbon, column 3, line 48 through column 5, line 20) and the duct is adapted to maintain a supply of reducing agent only when the gas flows in the first direction (see Gribbon, column 3, line 48 through column 5, line 20).

20. With respect to claim 16, Gribbon discloses equipment for purification of gases comprising supply means (58) to mix reducing agents with the gases to form a mixture and to supply the mixture to at least one heat exchanging matrix (10), the matrix adapted to heat the gas in a regenerative process to oxidation or self-decomposition temperature and a catalytic process, the at least one heat-exchanging matrix including at least three zones, at least one zone is a catalytic zone having a temperature below the oxidation or self-decomposition temperature that is catalytically active in promoting reduction of nitrogen oxides (22, 24), and at least one zone is a combustion zone (26), having a temperature of at least the oxidation or self-decomposition temperature, each catalytic zone being separated from each combustion zone by an intermediate matrix

zone (see Gribbon, Figure 2; each intermediate zone being at either side of the combustion chamber burner and providing a separation distance between the combustion chamber burner and catalytic zones), counted in the direction of flow wherein the intermediate matrix zone has a temperature reducing effect on the mixture prior to entering the catalytic zone.

21. With respect to claim 17, Gribbon discloses equipment for purification of gases comprising supply means (58) to mix reducing agents with the gases to form a mixture and to supply the mixture to a single heat exchanging matrix (10), the matrix adapted to heat the gas in a regenerative process to oxidation or self-decomposition temperature, the heat exchanging matrix including two catalytic zones (22, 24) that are catalytically active and situated on each side of a center combustion zone of the matrix and at least one intermediate matrix zones (see Gribbon, Figure 2; each intermediate zone being at either side of the combustion chamber burner and providing a separation distance between the combustion chamber burner and catalytic zones), each catalytic zone is separated from the center combustion zone by the at least one intermediate zones counted in the direction of flow, wherein the intermediate matrix zone has a temperature reducing effect on the gases prior to entering the catalytic zone and each catalytic zone has a temperature below the oxidation or self-decomposition temperature.

Response to Arguments

22. Applicant's arguments filed 2 August 2007 have been fully considered but they are not persuasive.

23. Examiner understands Applicant's principal arguments to be:

I. Whether shown explicitly or inherently, the intermediate matrix zone of Gribbon must be disposed the reduction catalyst (22, 24) and a regenerative chamber (14, 16).

II. There is no suggestion or teaching that the heat generated by the burner of Gribbon is selectively controlled. Therefore, it must be assumed that the heat generated by Gribbon's burner (28) evenly heats the VOC catalyst (18, 20), the reduction catalyst (22, 24), and the distribution plenum (62, 64).

III. Gribbon illustrates the reduction catalyst (22, 24) next to the combustion chamber (26). Therefore, Gribbon cannot explicitly nor inherently teach an intermediate matrix zone.

IV. Gribbon does not teach "supply means to mix reducing agents with the gases to form a mixture and to supply the mixture."

24. With respect to Applicant's first and third arguments, see discussion *supra* at paragraph 7. Examiner again notes that Gribbon does not explicitly disclose an intermediate matrix zone. However, Gribbon's Figure 2 provides a catalytic zone (aligned horizontally and corresponding to elements 22 and 24 in Figure 1), and a combustion zone (corresponding to element 28 in Figure 1). The catalytic zone and combustion zone as shown by Gribbon in both Figures 1 and 2 are *necessarily* separated by some distance (i.e. an "intermediate matrix zone"). In this regard,

Examiner notes that Applicant does *not* claim some minimum separation distance that is required to be intermediate the catalytic zone and the combustion zone.

Thus, Examiner finds Applicant's first and third arguments unpersuasive. The arguments do not comply with 37 CFR 1.111(c) because they do not clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. Further, they do not show how the amendments avoid such references or objections.

25. With respect to Applicant's second argument, Examiner notes that Applicant does not claim or otherwise specify the degree to which the intermediate matrix zone "has a temperature reducing effect on [the] mixture [of gases] prior to entering the catalytic zone." While Applicant is correct in saying that Gribbon neither teaches nor suggests selectively controlling the heat generated by the burner, it is also true that Gribbon does not supply a means to maintain a constant temperature throughout his device. Thus, there is no basis to support Applicant's "assumption" that the heat generated by Gribbon's burner (28) will evenly heat the VOC catalyst (18, 20), the reduction catalyst (22, 24), and the distribution plenum (62, 64). Therefore, Examiner finds that there will *necessarily* be a "temperature reducing effect" in the "intermediate matrix zone" (i.e. the space intermediate the catalytic zone (22, 24) and the burner (28)) of Gribbon. Moreover, because Applicant does not claim the degree to which the intermediate zone will have a "temperature reducing effect," Examiner finds that *any* reduction in temperature would meet Applicant's claim limitation.

Thus, Examiner finds Applicant's second argument unpersuasive. The argument does not comply with 37 CFR 1.111(c) because they do not clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. Further, they do not show how the amendments avoid such references or objections.

As a final note, Examiner submits that if Applicant's second argument were accepted as true, then the same would be the case for Applicant's own device since Applicant provides no disclosure for selectively controlling the heat generated by Applicant's burner (element (9) of Applicant's Fig. 2). Examiner further notes Applicant's specification (copy of the international application filed 30 August 2000) at pages 3 and 4 wherein Applicant explains "In the design of figure 2 the temperature is high in the combustion chamber 7 and the upper parts of the heat exchanging matrixes 6 and 6' and *the temperature gradually decreases towards the bottom of the heat exchanging matrixes*" (emphasis added). This statement further supports Examiner's position that there will likewise *necessarily* be a "temperature reducing effect" in the device of Gribbon which Examiner notes (1) is substantially similar to the design of Applicant's device (compare Gribbon's Fig. 2 with Applicant's Fig. 2), and (2) neither of Gribbon or Applicant's device providing a means for either selectively controlling or maintaining the heat generated by the burner units of the respective devices.

26. With respect to Applicant's fourth argument, Gribbon explicitly discloses a supply means (58) to mix reducing agents (i.e. ammonia) with the gases (process exhaust

gases flowing through transition duct (54)) to form a mixture (of ammonia and process exhaust gases) and to supply the mixture (to the heat exchanging matrix (10)).

Conclusion

27. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

28. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Randy Boyer whose telephone number is (571) 272-7113. The examiner can normally be reached Monday through Friday from 10:00 A.M. to 7:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola, can be reached at (571) 272-1444. The fax number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RPB

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